

# Are they useful? The effects of performance incentives on the prioritization of work versus personal ties

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## ABSTRACT

Most working adults report spending very little time with friends and family. The current research explores the aspects of work that encourage employees to spend less time with personal ties. We show that incentive systems play a critical role in shaping how people allocate their time to different relationship partners. Across three experiments, one survey, and one large-scale archival data set ( $N = 77,302$ ), exposure to performance incentives encouraged employees to spend more time with their work colleagues, even when it prevented them from spending time with their friends and family. This is because performance incentives led employees to perceive their work relationships as more instrumental. These findings suggest that incentive systems shape employees' perceptions of and their interactions with critical relationship partners.

## 1. Introduction

Socializing with friends and family is one of our happiest activities (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004; Mogilner et al., 2018). However, many working adults spend very little time with loved ones. In an average week, employees in the United States spend less than an hour of quality time per day with their family (Paul, 2018) and less than an hour per day with their friends (U.S. Department of Labor Statistics, (2015), 2015). Why is this the case? One potential answer could lie in a ubiquitous circumstance that the majority of workers cannot avoid—performance systems. We argue that the way people are paid for their work can shape how they think about and interact with various relationship partners, such as colleagues, friends, and family. We inspect the role of one of the most common incentive systems, performance incentives, in shaping everyday social interactions.

In a performance incentive system, people receive rewards if they meet or exceed a specific standard of performance on a task (Rusbult, Campbell, & Price, 1990; Shomstein & Johnson, 2013). Research has examined whether performance incentives impact performance (Jenkins et al., 1998), intrinsic motivation (Eisenberger et al., 1999), and attention (Beilock and Carr, 2005) compared to other non-performance incentive systems, such as fixed salaries. Building on this line of work, we suggest that this common incentive system also shapes the way

people think about their different relationship partners and influences their social interactions within and outside of organizations. Specifically, we predict that exposure to performance incentives will increase the perceived instrumentality of work relationships and increase the amount of time allocated to these relationships—often at the expense of spending time with personal relationship partners like friends and family.

### 1.1. Performance incentives

Performance incentives can increase productivity and are therefore used across a variety of domains, including education, health, and management (Ryan & Deci, 2000). In education, providing performance incentives for academic achievement can increase students' grades (Allan & Fryer, 2011). In health, rewarding patients with money for achieving specific goals can improve health behaviors, such as smoking cessation (Juliano et al., 2006) and medication adherence (DeFulio and Silverman, 2012). In management, performance incentives are pervasive across industries: sales agents receive bonuses for sales, call center employees earn commissions for calls, and CEOs receive stock options based on quarterly earnings (Lazear, 2000; Stroh, Brett, Baumann, & Reilly, 1996). In the United States, 75% of organizations employ some form of performance-based incentives (Harrison, 2019).

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Given their wide range of applications, performance incentives have garnered a great deal of attention from researchers. The previous literature has focused primarily on two direct consequences: whether performance incentives improve productivity (Jenkins et al., 1998) or undermine intrinsic motivation (Cameron et al., 2005). Stated differently, prior research has focused mostly on examining how performance incentives shape people's efforts and underlying attitudes towards a specific, incentivized task (Eisenberger, Rhoades, & Cameron, 1999; Harrison, Virick, & William, 1996; Miceli et al., 1991).

Moving beyond these investigations, research has started to examine the consequences of performance incentives for values and behaviors that are not directly tied to incentivized tasks. Exposure to performance incentives can increase gender bias (Castilla & Benard, 2010), decrease ethical behavior (Larkin et al., 2012), and increase the value that people attach to money (Hur and Nordgren, 2016). In the current research, we propose that performance incentives might also have consequences for social interactions. We argue that the social consequences of performance incentives should depend on whether a relationship partner is instrumental for the goal of earning monetary incentives. We predict that individuals in a performance-incentive system will spend more time with people who are task-relevant (e.g., colleagues)—even if this comes at the cost of interacting with friends and family from whom individuals typically derive a great deal of happiness.

### 1.2. Performance incentive and social relationships

These propositions are built on two lines of research that appear to predict opposing effects of performance incentives on social interactions. One line of research suggests the possibility that performance incentives will *decrease* the motivation to socialize by focusing people's attention on money. Focusing on money can promote self-sufficient behavior (Bianchi & Mohliver, 2016; Lea & Webley, 2006; Vohs, Mead, & Goode, 2006) and encourage people to work alone and socialize less (Hershfield, Mogilner, & Barnea, 2016; Whillans & Dunn, 2018; Whillans, Weidman, & Dunn, 2016). A recent conceptual review points to the possibility that reminders of money lead people to focus on maximizing economic gains and to spend less time with their loved ones (Vohs, 2015, see also: c.f. Caruso et al., 2017).

In contrast to the aforementioned research, another line of work suggests that performance incentives can *increase* social interactions. Prior research has shown that employees who were paid for their team's performance had more frequent social interactions and greater cooperation with their colleagues as compared to those who were paid for their individual performance (Dur and Sol, 2010). Likewise, financial incentives tend to increase motivation to connect and cooperate with other people working on the same task (Berger, Herbertz & Sliwka, 2011), suggesting that exposure to performance incentives can increase social interactions.

The current work attempts to reconcile this contrasting evidence by examining the role of *perceived instrumentality* of interaction partners. We argue that performance incentives could have diverging effects depending on the type of relationship in question and how instrumental the relationship is for achieving the goal of maximizing incentives. We examine how performance incentives impact the willingness to socialize with work ties versus non-work, personal ties and test whether willingness to socialize is driven by perceived instrumentality.

### 1.3. Performance incentive and relationship instrumentality

The principle of economic exchange suggests that employees in any type of payment system have a goal of making money – they provide labor with an expectation to receive monetary rewards in return (Desan, 2014; Foley, 1982; Porritt, 2007). Despite the fact that all employees have the goal of making money, performance incentives tend to make this reward-seeking goal more salient (Beilock & Carr, 2005; Markman, Maddox, & Worthy, 2006). Employees who receive performance

incentives think about the goal of making money more frequently than employees who receive other types of incentives (e.g., fixed salary), even when working on the same task (Hur and Nordgren, 2016). For example, when salespeople receive a bonus every time that they sell a car, each sale serves as a reminder of money (i.e., a reward) and reinforces the broad goal of making money (i.e., a reward-seeking goal). Research on cognitive control provides additional support for this theorizing (Shah et al., 2002) by demonstrating that frequent exposure to goal-related stimuli increases the mental accessibility of the goal (Chartrand and Bargh, 1996). Once the goal becomes accessible, it further biases one's attention, perception, and behavioral systems in a goal-driven manner (Hur et al., 2015).

We argue that the reward-seeking goal brought on by performance incentives biases social interactions in a goal-driven manner by shaping the perceived instrumentality of various relationship partners. Perceived instrumentality – the degree to which another person is seen to be helpful in achieving one's focal goal – plays an important role in relationship formation (Belmi & Pfeffer, 2018; Gruenfeld, Inesi, Magee, & Galinsky, 2008). Individuals can perceive a person as “useful” for several reasons: the other person might have access to resources (Shea and Fitzsimons, 2016), keep them away from temptations (Gallant et al., 2007), or provide emotional support to persist in goal pursuit (Brunstein et al., 1996). Once other people are perceived as “useful” for accomplishing a focal goal, they are often prioritized (Gruenfeld et al., 2008) and evaluated more positively (Fitzsimons and Shah, 2008).

Building on this research, in a performance-incentive system, we suggest that the degree to which another person is helpful in achieving one's goal of maximizing incentives could play an important role in relationship formation. Here, we focus on two critical types of relationship partners—work ties and personal ties. We propose that exposure to performance incentives will *increase* the amount of time and effort that people spend interacting with a work partner, because they believe that this person will help them progress toward their goal of making money. Given that time is a limited resource, when people decide to spend more time with one relationship partner, they tend to spend less time with other relationship partners (Greenhaus & Beutell, 1985). Thus, exposure to performance incentives should *decrease* the amount of time that people spend with personal relationship partners like friends and family who are less instrumental for their focal goal. In support of this proposition, researchers have studied spending time with work ties versus personal ties as an explicit trade-off (e.g., Bianchi & Vohs, 2016; Hershfield, Mogilner, & Barnea, 2016; Whillans, Macchia, & Dunn, 2019; Whillans & Dunn, 2018; Whillans, Weidman, & Dunn, 2016). Following from this research, we examine the effect of performance incentives on the trade-offs that people make between these two relationship partners.

More formally, we propose the following hypotheses:

**Hypothesis 1.** Exposure to performance incentives will increase the prioritization of work relationships (e.g., work colleagues) over personal relationships (e.g., friends and family).

**Hypothesis 2.** Exposure to performance incentives will increase the perceived instrumentality of work relationships.

**Hypothesis 3.** The effect of performance incentives on the prioritization of work relationships will be mediated by increases in the perceived instrumentality of work relationships.

## 2. Current research

We tested these hypotheses across five studies using a variety of samples, measures, and designs including three experiments, one survey, and one archival data set. Study 1 presented the direct trade-offs that employees commonly experience between work ties versus personal ties and tested whether performance incentives increased their willingness to prioritize work ties over personal ties. Study 2 tested our

proposed mechanism: the increased perceived instrumentality of work ties. Study 3 further examined the role of perceived instrumentality by testing whether task interdependence moderated the effect of performance incentives. Study 4 tested the effect of performance incentives using a decision-making measure—the number of minutes that participants allocated toward interacting with work ties. Study 5 replicated the main social interaction findings in an ecologically valid context by using a nationally representative sample of working adults in the United States (American Time Use Survey). We pre-registered the sample sizes, measures, hypotheses, and analyses for the three experiments and one survey through the Open Science Framework (<https://osf.io/5yj89/>).

### 3. Study 1

In Study 1, we tested the effect of performance incentives on the prioritization of work ties. Specifically, we tested whether employees who received performance incentives at their job were more likely to prioritize their work ties over personal ties. We set the two types of social ties against each other to test the effect of performance incentives on the direct trade-off between work and personal ties. We administered scenarios that contained realistic dilemmas in which respondents had to choose between spending time with their work ties versus spending time with their personal ties. For example, respondents were asked questions like: Would you go to a happy hour with colleagues or go to your friend's birthday party? Would you go to a networking event or go to your child's piano recital? We predicted that respondents who received performance incentives at work would be more likely to choose to spend time with relationship partners who were relevant to the incentivized task (i.e., work ties) instead of those who were not (i.e., personal ties) as compared to respondents who received fixed salaries (Hypothesis 1).

To create realistic dilemmas, we conducted a pilot study with 595 working adults recruited from Amazon's Mechanical Turk ( $M_{\text{age}} = 37.61$ ,  $SD_{\text{age}} = 10.74$ , 36% female). We aimed for a rather large sample size to ensure that we obtained the common, representative dilemmas that employees encountered on a regular basis. We created five scenarios based on the most common dilemmas that we observed from respondents' answers. The pilot study is described in detail in SOM. The exact instructions and items can be found on the Open Science Framework page (<https://osf.io/5yj89/>).

#### 3.1. Participants

We aimed to recruit respondents via Amazon's Mechanical Turk until we reached at least 200 respondents per group (performance-incentive vs. participation-incentive). Because there was a greater proportion of respondents who were paid based on participation (vs. performance), we ended up recruiting 545 respondents to achieve 200 respondents from each group ( $M_{\text{age}} = 36.69$ ,  $SD_{\text{age}} = 10.27$ , 41% female, 40% performance incentives). A post-hoc sensitivity analysis showed that this sample size provided 95% power to detect a small effect of  $d = 0.15$  (Cohen, 1992). All respondents received \$0.70.

#### 3.2. Procedure

Respondents first read the five dilemma scenarios and made a choice between spending time with work versus personal ties. Respondents received a score of 1 each time they chose work ties. We summed the scores such that respondents received an overall score from 0 to 5. A higher score indicated that respondents were more likely to choose to spend time with work ties at the sacrifice of personal ties ( $M = 2.50$ ,  $SD = 1.49$ ). This measure was our dependent variable.

Respondents then answered questions about their current job. Most importantly, they reported on whether they received performance incentives at work (1 = performance-incentive) or not (0 = participation-incentive). We asked the incentive questions after our dependent measure to rule out potential order effects (Krosnick & Alwin, 1987).

Respondents also answered standard questions that we used as control variables including age, gender, education, marital status, income, household size, number of children, work hours, tenure, occupation type, and hourly pay (Pai, DeVoe, & Pfeffer, 2020). We also measured and controlled for subjective social status (McArthur Scale of Subjective Social Status; Adler, Epel, Castellazzo, & Ickovics, 2000), perceived money scarcity (adapted from Roux, Goldsmith, & Bonezzi, 2015; e.g., "I don't have enough money"), and social desirability (adapted from Reynolds, 1982; e.g., "Are you always willing to admit when you make a mistake?").

### 3.3. Results

#### 3.3.1. Relationship trade-offs

We conducted an OLS regression to examine whether respondents who reported receiving performance-based incentives were more likely to prioritize work ties over personal ties. Confirming our central hypothesis, respondents who received performance incentives chose to spend time with work ties at the sacrifice of spending time with personal ties more frequently ( $M = 2.98$ ;  $SD = 1.44$ ) than respondents who received participation incentives ( $M = 1.79$ ;  $SD = 1.26$ ),  $b = 1.91$ ,  $SE = 0.12$ ,  $p < .001$ ,  $R^2_{\text{adj}} = 0.15$ . These results held controlling for our pre-registered set of demographic and work-related covariates,  $b = 0.57$ ,  $SE$

**Table 1**  
Study 1 Respondents' Choice between Work vs. Personal Ties.

Variable	(1)	(2)
Performance incentives	1.91*** (0.12)	0.57*** (0.14)
Age		−0.01* (0.01)
Gender		0.25* (0.11)
Education		0.14** (0.06)
Marital status		0.37** (0.16)
Household income		−0.06 (0.06)
Household size		−0.14* (0.07)
Number of children		0.11 (0.08)
Work hours		−0.32*** (0.10)
Tenure		0.17 (0.12)
Hourly status		−0.30* (0.12)
Occupation		YES
Subjective social status		0.14*** (0.04)
Perceived money scarcity		0.12** (0.04)
Social desirability		0.04 (0.19)
F Statistic	$F(1,544) = 91.40$	$F(24,490) = 9.51^a$
p-value	0.001	0.001
$R^2_{\text{adj}}$	0.14	0.28

Note. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . The control variables were measured and coded as follows: age, gender (0 = male; 1 = female), education (from 1 = less than high school to 7 = doctoral degree), marital status (0 = not married; 1 = married or in a marriage-like relationship), household income (log), household size, number of children, work hours (log), tenure (log), hourly pay status (0 = non-hourly; 1 = hourly), and occupation (dummy: management, service, sales, farming, construction, production, government, retired, unemployed, self-employed).

<sup>a</sup> The decrease in degrees of freedom is due to missing or nonsensical answers included as part of the open-ended household income variable, resulting in listwise deletion.

$= 0.14, p < .001, R^2_{adj} = 0.28$ . See Table 1 for detailed results.<sup>2</sup>

### 3.4. Discussion

When work ties and personal ties were directly compared, people who worked under a performance incentive system were more likely to socialize with work colleagues even if it meant sacrificing time with friends and family. The results also indicate that exposure to performance incentives predicts whether employees prioritize work ties over personal ties, even when the incentive system is not made salient at the moment of decision-making. Yet, the correlational nature of this study does not provide strong evidence for causality. We thus conducted an experiment in Study 2 where we manipulated participants' incentive systems.

## 4. Study 2

The main goal of Study 2 was to experimentally manipulate which type of incentives participants were exposed to and test the effect of performance incentives on social intentions. We predicted that participants who expected to be paid for their performance would be more motivated to prioritize work ties over personal ties compared to participants who expected to be paid for participation (Hypothesis 1). Furthermore, we tested our proposed mechanism: the increased perceived instrumentality of work ties. We predicted that participants in the performance-incentive condition would perceive work ties to be more instrumental than those in the participation-incentive (control) condition and that perceived instrumentality would mediate the effect of performance incentives on the prioritization of work ties (Hypotheses 2 and 3).

### 4.1. Participants

We recruited four hundred participants ( $M_{age} = 38.65, SD_{age} = 11.70$ , 37% female) via Amazon's Mechanical Turk. Participants received \$0.50 at the end of the study. We had no data available to conduct an a priori power calculation as this study was the first to use this paradigm to test the effect of incentives on trade-offs between work and personal ties. We decided to terminate data collection at 400 participants a priori and ended up with 399 usable data points. A post-hoc sensitivity analysis showed that this sample size provided 95% power to detect a small effect of  $d = 0.17$  (Cohen, 1992).

### 4.2. Procedure

We randomly assigned participants to one of two conditions (performance-incentive vs. participation-incentive) in a between-subjects design. Participants imagined that they were employed at a marketing company where they worked on projects that involved developing various marketing strategies. At the end of each project, a performance assessment took place where participants would be evaluated on their performance by peers, managers, and clients.

Participants were then told how they would be rewarded. In the performance-incentive condition ( $n = 196$ ), participants were told that they would receive monetary rewards based on performance on top of their base salary. In the participation-incentive condition ( $n = 203$ ), participants were told that they would receive a fixed amount of pay for their participation regardless of performance. We told participants in both conditions that the expected amount of reward for each project

would be \$3,000 on average.<sup>3</sup> We employed participation-contingent incentives (e.g., fixed salaries) as our control condition, following a number of prior studies that have compared the effect of different incentive systems while holding the task and reward constant (Bailey, Brown, & Cocco, 1998; Braun, Kirsch, & Yamamoto, 2011; Cadsby, Song, & Tapon, 2007; Hur & Nordgren, 2016). This design allowed us to provide participants with an identical task and reward amount, while only differing the way that the reward was earned.

After reading about each incentive system, participants rated perceived instrumentality of their work relationships with five items on a scale from 1 = *Strongly Disagree* to 7 = *Strongly Agree* (e.g., "My relationship with my team members would be useful for me to achieve my goals at this company."; adapted from Gruenfeld et al., 2008). Participants then indicated their willingness to prioritize work relationships over non-work, personal relationships with four items (e.g., "On occasion, I would prioritize spending time socializing with my team members over socializing with my friends and family"). We took the average of each scale to create composite measures of perceived instrumentality ( $\alpha = 0.89$ ) and prioritization of work ties ( $\alpha = 0.91$ ).<sup>4</sup> Lastly, participants provided demographic information and were debriefed about the purpose of the study. The exact instructions and items can be found on the Open Science Framework page.

## 4.3. Results

### 4.3.1. Prioritization of work ties

First, we analyzed participants' willingness to prioritize work ties over non-work, personal ties. As predicted, a simple  $t$ -test yielded a main effect of the incentive-system manipulation: participants who were randomly assigned to the performance-incentive condition indicated greater willingness to prioritize socializing with work ties over personal ties ( $M = 5.02, SD = 1.25$ ) than those in the participation-incentive condition ( $M = 3.72, SD = 1.33$ ),  $t(397) = -10.01, p < .001, d = 1.29$ . This result supports our prediction that performance incentives increase the extent to which individuals prioritize socializing with task-relevant work ties as opposed to non-task relevant personal ties.

### 4.3.2. Perceived instrumentality

Next, we analyzed participants' perception of the instrumentality of work ties. A simple  $t$ -test on the instrumentality measure yielded a main effect of the incentive-system manipulation: participants in the performance-incentive condition perceived their work relationships as more instrumental for achieving goals at work ( $M = 6.15, SD = 0.79$ ) than those in the participation-incentive condition ( $M = 5.28, SD = 1.13$ ),  $t(397) = -8.92, p < .001, d = 0.97$ . This result supports our prediction that performance incentives increase the perceived instrumentality of work ties.

### 4.3.3. Mediation

Lastly, we conducted a mediation analysis using the PROCESS Mediation Model 4 (Hayes, 2013; Preacher & Hayes, 2004) with incentive system as the independent variable (1 = performance-incentive, -1 = participation-incentive), perceived instrumentality as the

<sup>2</sup> On an exploratory basis, we examined whether there was an interaction between SES and performance incentives on the trade-offs that respondents made. The interaction was not significant for subjective SES,  $b = 0.09, SE = 0.06, p = .139$  or for objective SES (a standardized composite of education and income),  $b = -0.06, SE = 0.16, p = .712$ .

<sup>3</sup> We also asked participants to indicate how much they expected to earn per project ("In the scenario, how much did you think you would earn on the project in total?"). The expected reward amount varied between the performance- ( $M = 7.23, SD = 2.13$ ) and participation-incentive conditions ( $M = 6.83, SD = 1.29$ ),  $t(334) = -2.28, p = .023$ . The degrees of freedom were adjusted to 334 due to unequal variances (Levene's  $F = 17.65, p < .001$ ). Both groups rounded to the mean of 7, which indicates the category of \$3,000. We confirm that all of our results hold controlling for this variable. See SOM for the detailed results.

<sup>4</sup> The order of the instrumentality and prioritization measures was counter-balanced, and all results held regardless of presentation order. See SOM for the analysis.



mediating variable, and willingness to prioritize work ties as the dependent variable. The total effect of performance incentives on willingness to prioritize work ties was significant,  $b = 1.29$ ,  $SE = 0.13$ ,  $p < .001$ , 95% CI [1.55, 0.90]. The confidence intervals for the indirect effect excluded zero for perceived instrumentality,  $b = 0.45$ ,  $SE = 0.07$ ,  $p < .001$ , 95% CI [0.31, 0.59]. The direct effect of performance incentives on willingness to prioritize work ties was smaller,  $b = 0.85$ ,  $SE = 0.13$ ,  $p < .001$ , 95% CI [0.59, 1.11]. These results suggest that perceived instrumentality partially mediated the observed effect (Fig. 1).

#### 4.4. Discussion

These results provide further support for our central prediction: exposure to performance incentives led participants to prioritize socializing with work ties over personal ties. These results also provide evidence for our proposed mechanism: performance incentives increased the perceived instrumentality of work ties, which increased willingness to prioritize work ties over personal ties. Taken together, we believe that Studies 1 and 2 complement one another. While respondents in Study 1 were asked about their actual payment system at work, participants in Study 2 were told exactly how they would be paid in the scenario, which may be less realistic yet provide more control over whether one's incentives are contingent on performance or not.

An open question is whether performance measurement plays a role in the effect of performance incentives. In Study 2, we told participants that their performance was determined by peer, manager, and client evaluations, indicating that participants' pay in the performance incentive condition was heavily dependent on peer evaluation. In Study 3, we varied the degree to which incentives were determined by task interdependence.

### 5. Study 3

The goal of Study 3 was to replicate the results from Studies 1 and 2 while directly manipulating perceived instrumentality. Employees might find their work ties instrumental for a variety of reasons: One can benefit from colleagues by exchanging tacit knowledge (Politis, 2003), receiving advice (Zagenczyk and Murrell, 2009), and communicating efficiently (Kashyap, 2019). In our conceptualization, any work structure that increases the instrumentality of work ties should amplify the effect of performance incentives: the more that work ties are "useful" for maximizing incentives, the more that people should prioritize their work ties over personal ties. While participants in Study 2 depended on their peers via evaluation, we used task interdependence in Study 3 as a means to create the dependence on peers. Specifically, we manipulated instrumentality by varying the level of task interdependence. We therefore predicted an interaction, such that the effect of performance incentives on the prioritization of work ties would be moderated by the degree of task interdependence needed to earn more money.

#### 5.1. Participants

We recruited eight hundred and one participants ( $M_{\text{age}} = 37.54$ ,  $SD_{\text{age}} = 11.41$ , 40% female) via Amazon's Mechanical Turk. All

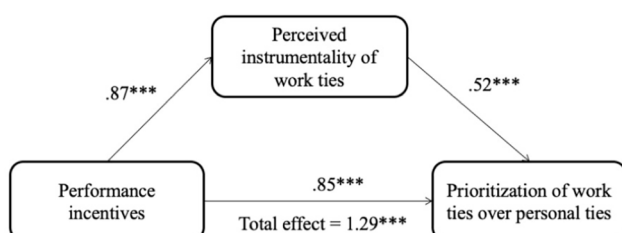


Fig. 1. Study 2 Mediation Analysis. Note. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

participants received \$0.70 at the end of the study. A priori we decided to collect 200 participants for each condition and to terminate data collection at 800 participants. We ended up with 801 usable data points. A post-hoc sensitivity analysis showed that this sample size provided 95% power to detect a small to medium interaction effect of  $d = 0.26$  (Cohen, 1992).

#### 5.2. Procedure

We randomly assigned participants to one of four conditions in a 2 (incentive system: performance vs. participation)  $\times$  2 (task interdependence: high vs. low) between-subjects design. Using a similar paradigm as in Study 2, participants first imagined that they worked in a marketing company and typically received assessments about how well their final product performed. We manipulated perceived instrumentality of work ties by varying the degree of task interdependence. In the high-interdependence condition ( $n = 396$ ), participants were told that 90% of their tasks would involve teamwork, while 10% would involve individual work. In contrast, in the low-interdependence condition ( $n = 405$ ), participants were told that 90% of their tasks would involve individual work, while 10% would involve teamwork.

We then informed participants whether or not their monetary rewards would be contingent on their performance. In the performance-incentive condition ( $n = 401$ ), we told participants that they would receive monetary rewards based on their performance, which made up half of their overall pay.<sup>5</sup> In the participation-incentive condition ( $n = 400$ ), we told participants that they would receive a fixed amount of money regardless of their performance. We told participants in all four conditions that, on average, the expected amount of payment for each project would be about \$3,000.<sup>6</sup>

After reading about each incentive system, participants first rated the perceived instrumentality of their work relationships with five items on a scale ranging from 1 = *Strongly Disagree* to 7 = *Strongly Agree* ( $\alpha = 0.92$ ; e.g., "My relationship with my team members would be useful for me to achieve my goal of making more money").<sup>7</sup> Participants then indicated their willingness to prioritize work relationships over non-work, personal relationships using the same four items from Study 2 ( $\alpha = 0.93$ ; e.g., "I would try not to miss opportunities to socialize with my team members outside of work, even when I miss opportunities to socialize with friends and family"). The exact instructions and items are on the Open Science Framework page.

#### 5.3. Results

##### 5.3.1. Manipulation check

A  $t$ -test analysis confirmed that our manipulation was successful: participants in the high-interdependence condition ( $M = 5.35$ ,  $SD = 1.43$ ) perceived work ties as more instrumental for making money than those in the low-interdependence condition, ( $M = 4.75$ ,  $SD = 1.69$ ),  $t(799) = -5.43$ ,  $p < .001$ ,  $d = 0.38$ . Participants in the performance-incentive condition ( $M = 5.50$ ,  $SD = 1.24$ ) perceived work ties as

<sup>5</sup> We set our scenario for performance incentives at 50% because this is a common rate in which performance incentives make up employees' total pay (Lucero, 2019).

<sup>6</sup> As in Study 2, we also asked participants to indicate how much they expected to earn per project ("In the scenario, how much money did you expect you would earn per project?"). The expected reward amount did not significantly differ between the performance- and participation-incentive conditions,  $t(799) = 0.45$ ,  $p = .652$ .

<sup>7</sup> While Study 2 asked participants to indicate instrumentality for their goals at work in general, Study 3 clarified exactly which goal that team members were instrumental for (i.e., money). We believe the two instrumentality measures complement each other in that Study 3 reduces the concern of not specifying which goal participants should consider when answering the instrumentality questions.

more instrumental than those in the participation-incentive condition ( $M = 4.59$ ,  $SD = 1.77$ ),  $t(799) = -8.36$ ,  $p < .001$ ,  $d = 0.76$ .

### 5.3.2. Prioritization of work ties

We conducted a 2 (incentive system)  $\times$  2 (task interdependence) ANOVA to analyze participants' willingness to prioritize work ties over personal ties. Confirming our hypothesis, the interaction was significant, indicating that the level of task interdependence moderated the effect of incentive systems on willingness to prioritize socializing with work ties over personal ties,  $F(3,797) = 6.58$ ,  $MSE = 19.32$ ,  $p = .011$ ,  $\eta^2 = 0.01$ .

Decomposing this interaction, when work tasks involved a high level of interdependence, participants in the performance-incentive condition ( $M = 5.06$ ,  $SD = 1.17$ ) were significantly more likely to prioritize work ties over personal ties as compared to those in the participation-incentive condition ( $M = 4.38$ ,  $SD = 1.83$ ),  $F(1,797) = 15.57$ ,  $MSE = 45.73$ ,  $p < .001$ ,  $\eta^2 = 0.02$ . In contrast, among participants whose tasks involved a low level of interdependence, there was no difference in the willingness to prioritize work ties between the two incentive conditions ( $M_{\text{Performance}} = 4.27$ ,  $SD_{\text{Performance}} = 1.84$ ;  $M_{\text{Participation}} = 4.22$ ,  $SD_{\text{Participation}} = 1.90$ ,  $F(1,797) = 0.12$ ,  $MSE = 0.35$ ,  $p = .737$ ,  $\eta^2 < 0.001$ . See Fig. 2 for a visualization of the results.

We also examined the effect of task interdependence within each incentive conditions. When participants expected to receive performance incentives, those in the high-interdependence condition ( $M = 5.06$ ,  $SD = 1.17$ ) were more likely to prioritize work ties over personal ties compared to those in the low-interdependence condition ( $M = 4.28$ ,  $SD = 1.84$ ),  $F(1,797) = 20.88$ ,  $MSE = 61.34$ ,  $p < .001$ ,  $\eta^2 = 0.01$ . In contrast, when participants expected to receive participation incentives, there was no difference on willingness to prioritize work ties between the low and high-interdependence conditions ( $M_{\text{Performance}} = 4.38$ ,  $SD_{\text{Performance}} = 1.83$ ;  $M_{\text{Participation}} = 4.22$ ,  $SD_{\text{Participation}} = 1.90$ ,  $F(1,797) = 0.88$ ,  $MSE = 2.59$ ,  $p = .348$ ,  $\eta^2 < 0.001$ .

## 5.4. Discussion

Study 3 provides additional support for the perceived instrumentality account. The effect of performance incentives on willingness to prioritize work ties was moderated by the degree to which work tasks involved interdependence. These results show that the effect of performance incentives on social interactions with work ties depends critically on whether they are instrumental for achieving financial rewards. Studies 1–3 examined the extent to which participants said they would prioritize their work ties. A remaining question is whether we would observe the same effect with a decision-making measure, which could be less subject to social desirability concerns (Girard & Cohn, 2016; Hur,

Ruttan, & Shea, 2020; Whillans, Weidman, & Dunn, 2016). Thus, in Study 4, we asked participants to allocate the amount of time that they would spend interacting with other participants in preparation for an upcoming task.

## 6. Study 4

The main goal of Study 4 was to replicate our previous results with a decision-making measure. Participants were told that they would work on a collaborative task with other participants as a team and then allocated the number of minutes that they would spend interacting with team members prior to working on the task. We predicted that participants who expected to receive incentives for their performance would allocate more time toward interacting with team members than those who expected to receive incentives for participation. We also explored differences in the nature of these social interactions by examining whether participants in the performance-incentive condition would choose to allocate more time to team members on goal-relevant (i.e., task related) issues than those in the participation-incentive condition.

### 6.1. Participants

To test these predictions, we recruited four hundred participants ( $M_{\text{age}} = 36.59$ ,  $SD_{\text{age}} = 11.03$ , 38% female) online via Amazon's Mechanical Turk. All participants received \$1.50 for their participation. A priori, we decided to terminate data collection at 400 participants and collected ( $n = 347$ ) usable data points after excluding participants who did not pass our pre-registered attention check measure. A post-hoc sensitivity analysis showed that this sample size ( $n = 347$ ) provided 95% power to detect a small effect of  $d = 0.19$  (Cohen, 1992). The results were statistically equivalent when looking at the full sample.<sup>8</sup>

### 6.2. Procedure

Participants were randomly assigned to one of two conditions: performance incentives or participation incentives. Participants were first told that they would work on a computerized 3D Lego puzzle task and were shown several images of Lego models as examples. Participants were then told that they would be grouped with other workers on MTurk as a team and would work on the task together, interacting through an online chat platform called ChatPlat.

We told participants that the task would be divided into an observation period and a construction period. The observation period would require participants to prepare how to memorize the provided Lego model and plan how to put the pieces together. The construction period would require participants to put the Lego pieces together to build the model as accurately as possible. There would be five puzzles to solve in total (i.e., five Lego models). Participants were told that effective team communication would help them to succeed at their task.

Participants in the performance-incentive condition read that they would receive a bonus based on the number of puzzles their team solved. Each puzzle task was worth a bonus of \$0.10 and participants could earn up to \$0.50 if they solved all five puzzles correctly. In contrast, participants in the participation-incentive condition read that their pay would not be contingent on performance and that they would receive a fixed bonus amount regardless of the number of puzzles that their team solved (\$0.50). Participants in both conditions planned to work on the same task and expected to receive the comparable number of rewards, but the incentive system for receiving the rewards differed between the two

Study 3 ANOVA Results.

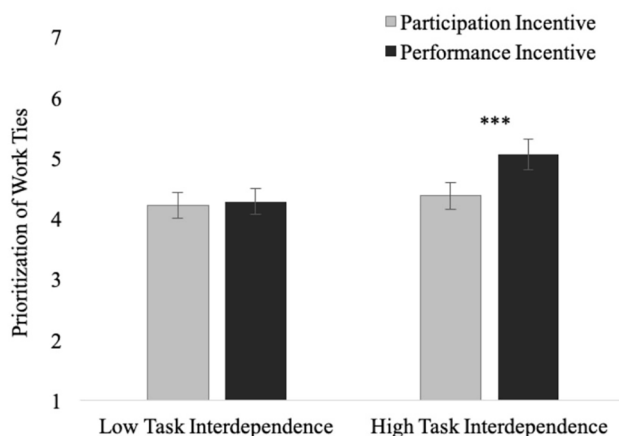


Fig. 2. Study 3 ANOVA Results. Note. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

<sup>8</sup> The results remained the same in our earlier experimental studies after excluding participants who failed attention checks. We did not pre-register to exclude participants in Studies 1–3 but did so in Study 4 due to the more complex instructions provided to participants. Thus, Studies 1–4 all followed our pre-registered exclusion criteria.

conditions (Hur and Nordgren, 2016).

After reading the task instructions, participants were told that they had a 5-minute pre-work session and that they were responsible for deciding how their team would spend this time. Participants could allocate the amount of time that they wanted to spend alone or to spend interacting with team members online. Participants had to allocate the five minutes of time to four different activities: interacting with team members on task-related matters, interacting with team members on non-task related matters, preparing for the task alone, and neither preparing for the task alone nor interacting with team members (i.e., relaxing alone). We collected data on the amount of time that participants allocated toward spending time relaxing without working on the task because it is possible that the incentive manipulation could systematically affect the amount of effort participants intended to exert on the task. If the two conditions do not differ in the amount of time that participants planned to spend relaxing, we can conclude that participants across the conditions intended to invest relatively similar levels of effort. These items served as our key dependent variables.<sup>9</sup> The exact instructions and items are on the Open Science Framework page.

### 6.3. Results

#### 6.3.1. Social interaction decisions

We first examined the main effect of performance incentives on the time that participants planned to spend interacting with team members during the pre-work session. A *t*-test yielded a significant main effect of the incentive-system manipulation such that participants in the performance incentive condition ( $M = 2.00_{\text{min}}$ ,  $SD = 1.49$ ) planned to spend more minutes with team members on task-related matters than participants in the participation incentive condition ( $M = 1.62_{\text{min}}$ ,  $SD = 1.32$ ),  $t(345) = -2.48$ ,  $p = .014$ ,  $d = 0.27$ . This result held when we used a log-transformed outcome measure to account for non-normality. This result fits our prediction that performance incentives should increase the amount of time spent on instrumental relationships.

Participants in the performance incentive condition ( $M = 0.56$ ,  $SD = 0.76$ ) planned to spend marginally fewer minutes with team members on non-task related matters than in the participation incentive condition ( $M = 0.72$ ,  $SD = 0.78$ ),  $t(345) = 1.97$ ,  $p = .050$ ,  $d = 0.21$ . Participants did not differ in the amount of time that they planned to spend alone preparing for the task ( $M_{\text{performance}} = 1.97$ ,  $SD = 1.65$ ;  $M_{\text{participation}} = 2.18$ ,  $SD = 1.62$ ),  $t(345) = 1.25$ ,  $p = .211$ ,  $d = 0.21$ ) or relaxing alone without preparing for the task ( $M_{\text{performance}} = 0.48$ ,  $SD = 0.98$ ;  $M_{\text{participation}} = 0.48$ ,  $SD = 0.97$ ),  $t(345) = -0.06$ ,  $p = .956$ ,  $d = 0.001$ . Given that there was no difference in time allocated to relaxing without working on the task between the two conditions, we can conclude that all participants intended to invest relatively similar levels of effort.

### 6.4. Discussion

Study 4 provides support for our prediction with a decision-based measure: the number of minutes that participants allocated toward interacting with team members. Moreover, exploratory analyses indicated that participants in a performance incentive system planned to spend more time with team members on task-related matters as compared to those in a participation incentive system who planned to spend more time with team members on non-task related matters. These results provide further support for our instrumentality account. When

<sup>9</sup> We told participants that they would work on the task, but they did not, following a widely-used practice to capture decision-making (e.g., Hur et al., 2020). After debriefing, we asked participants whether the instruction about completing the task with other participants was believable. 92% of participants answered that it was believable. Our results held with and without the inclusion of the 8% of participants who answered that they did not believe that they would work on the puzzle task.

people are working under performance incentives, they plan to spend more time with colleagues who are instrumental for their money-making goal and to discuss topics that are instrumental for these goals.

It is worth noting that in Studies 2 and 3, the effect of performance incentives on a composite measure of more work-related items was slightly stronger (e.g., socializing at work) than the effect on a composite measure of less work-related items (e.g., socializing outside of work), but the difference between the two measures was not statistically significant. We speculate that the reason for the difference between these studies might have been driven by differences in the measurement and design (Poole, Hewes, VanLear, & Canary, 2017). Studies 2 and 3 used Likert scale measures, whereas Study 4 used a zero-sum measure where participants allocated a limited number of minutes to allocate between more vs. less work-related interactions. The work tasks also differed, such that participants in Study 4 thought that they were going to work with others in minutes, potentially encouraging them to talk about work to a greater extent.

Together, in Studies 1–4, we measured or manipulated the level of performance-incentive contingency and asked participants to choose, rate, or plan how much time they would invest in interacting with work (vs. personal) ties in laboratory settings. However, it remains unclear whether the effect of performance incentives exists in everyday life. In Study 5, we further expanded on these findings by exploring actual time spent on social interactions outside the lab.

## 7. Study 5

The main purpose of Study 5 was to test the relationship between performance incentives and time spent on social interactions with work ties and personal ties. We used a large-scale, publicly available dataset to examine whether exposure to performance incentives shaped daily social interactions. We predicted that people who were paid for their performance would spend proportionately more time interacting with work colleagues compared to friends and family.

Another objective of Study 5 was to explore the downstream consequences of interacting with work versus personal ties on subjective well-being. It is possible that employees who receive performance incentives spend more time with coworkers because they enjoy these interactions more, given that these interactions could help employees achieve their reward-seeking goals (Fonner, 2015). However, based on abundant evidence showing that socializing with personal ties boosts happiness (Diener & Seligman, 2002), it is also possible that employees derive more happiness from interactions with friends and family, regardless of the incentive system that they are exposed to. We explored these competing possibilities.

### 7.1. Sample

We analyzed data from the 2010–2015 waves of the American Time Use Survey (ATUS; Hofferth, Flood & Sobek, 2013). The ATUS is administered by the U.S. Census Bureau, which selects a large and diverse set of U.S. households from the Current Population Survey (CPS) and approximates a nationally representative sample (U.S. Department of Labor Statistics, 2014). The sample includes a significant proportion of households with Black and Hispanic members, as well as households with children. It is the only existing federal survey that provides data on a large range of non-economic activities, from hobbies to social interactions. Full information about the survey is available at <http://bls.gov/tus/home.htm>.

We used the 2010–2015 waves because these waves contained our key variables of interest: incentive systems, type of social relationships, and time spent socializing with each type of relationship partner in the past 24 hours. Respondents were included if they had data for all of the key variables. The sample consisted of 75,210 respondents ( $M_{\text{age}} = 39.18$ ,  $SD_{\text{age}} = 12.56$ , 47% female) from diverse industries, such as professionals (26%), sales (14%), service (9%), and production (7%).

## 7.2. Method

### 7.2.1. Incentive system

Respondents reported whether they received performance incentives (e.g., commissions, bonus) or whether they received participation incentives (e.g., fixed salaries). Consistent with previous research on this topic (Hur and Nordgren, 2016), we dummy coded incentive system (1 = performance-incentive; 0 = participation-incentive) as the independent variable. Within our sample, 12,467 respondents were paid with performance incentives and 62,743 were paid with participation incentives. On average, respondents who received performance incentives were younger ( $M_{\text{age}} = 38.48$   $SD_{\text{age}} = 12.62$ ), more likely to be male (59%) and less likely to live with a married spouse (53%) than those who received participation incentives. The demographics of the sample are fully described in the SOM (Table S2).

### 7.2.2. Time spent on social interactions

Our main variable of interest was the amount of time that respondents spent socializing with work ties versus personal ties (i.e., friends and family) in the past 24 hours. These data were collected during 15 to 20-minute phone interviews. During these interviews, respondents reconstructed what they did on the previous day, episode by episode, as per the original Day Reconstruction Method (DRM; Kahneman et al., 2004). Respondents reconstructed a detailed account of all of their activities, starting at 4 a.m. the previous day and ending at 4 a.m. on the day of the interview. They described the activities in their own words, and these activities were later coded by at least two independent coders based on a broad range of activity categories. These descriptions included how long respondents spent on each activity, who accompanied them, and where the activity took place.

The open-ended nature of this method is considered the ‘gold-standard’ of time-use data collection because the time diary consists of a simple record of all activities that took place during the day and therefore provides minimal opportunity for respondents to distort their activities (e.g., reporting more hours of work to portray themselves as a hard worker). To distort one activity, respondents would have to fabricate all other activities. Thus, the ATUS captures an accurate picture of people’s entire day by collecting self-reports in an open-ended fashion on an activity-by-activity basis (see Giurge, Whillans, & West, 2020 for a review). This technique also preserves the “zero-sum” property of time, allowing us to examine trade-offs between engaging in one activity vs. another (i.e., increases in one activity resulting in decreases in another).

We focused on the time that respondents spent in the last 24 hours socializing with work ties (i.e., colleagues) vs. the time they spent socializing with personal ties (i.e., friends and family). The time-use variables included a number of outliers, resulting in highly right-skewed distributions. To normalize the distributions, we took the square root of each variable (Cohen, Cohen, West, & Aiken, 2013). This is consistent with prior work on time-use (Bianchi & Vohs, 2016; Smeets, Whillans, Bekkers, & Norton, 2020). Our dependent variable represented prioritization of work- over personal ties, which was the percentage of time spent with work ties proportionate to the time spent with personal ties: number of minutes spent with colleagues divided by number of minutes spent with family and friends per day, multiplied by 100.

The variables that involved time spent with each type of social ties (colleagues, friends, and family) were constructed by ATUS, following the categorization that respondents provided. Respondents were asked, “who was in the room with you? Who accompanied you?” and answered from a list of relationship categories (see Open Science Framework). Respondents defined their work relationships (colleagues) and personal relationships (friends and family), and their responses were categorized into two groups, allowing for a clear test of our hypotheses.

### 7.2.3. Happiness

The ATUS also measures the emotions that respondents experience

during their daily activities. A computerized system randomly chooses three time-intervals from respondents’ reconstructed day and reminds them of the activity they were engaging at the time. Respondents then rate how they felt engaging in the activity on a 7-point scale (1 = *Not at all*, 7 = *Extremely*). On an exploratory basis, we examined the effects of performance incentives on happiness via their influence on social interactions—given that social interactions are a critical predictor of daily happiness (Mogilner et al., 2018).

### 7.2.4. Control variables

Following from previous research on time use (Mogilner, 2010), we controlled for demographic information including respondents’ gender, age, income, and relationship status. We also controlled for marital status and household size because these variables could affect time spent on personal relationships (Whillans et al., 2016). Consistent with related research using this data set (Bianchi and Vohs, 2016), we included dummy coded variables that represented the survey year and day of the week that respondents completed the survey. We controlled for work hours (i.e., the amount of time worked in an average week) as people who are paid for their performance might spend more time with co-workers simply because they work longer hours. We also included hourly pay following past research showing that employees with hourly pay spend more time with colleagues (Pai et al., 2020). Lastly, we controlled for occupation because respondents who are paid for performance might prioritize work colleagues due to the nature of their jobs.

## 7.3. Results

### 7.3.1. Time spent on social interactions

First, we conducted an ordinary least squares (OLS) regression with incentive system as the independent variable and time spent interacting as the dependent variable. Consistent with our previous studies, respondents who received performance incentives spent proportionately more time socializing with work colleagues than with friends and family,  $b = 2.44$ ,  $SE = 0.18$ ,  $p < .001$ , 95% CI [2.08, 2.80] (see model 1 of Table 2). This result held controlling for our set of covariates,  $b = 1.13$ ,  $SE = 0.17$ ,  $p < .001$ , 95% CI [0.80, 1.46] (see model 2 of Table 2) and when additionally controlling for occupation,  $b = 0.90$ ,  $SE = 0.17$ ,  $p < .001$ , 95% CI [0.56, 1.23] (see model 3 of Table 2).

### 7.3.2. Happiness

Next, on an exploratory basis, we tested the effect of relationship type (work vs. personal) on happiness. Because respondents rated their emotions at three random time points, we conducted hierarchical regression analysis to account for non-independence. This analysis yielded the following results: Spending proportionately more time with work colleagues (vs. with friends and family) was associated with lower happiness,  $b = -0.01$   $SE = 0.0004$ ,  $p < .001$ , 95% CI [-0.01, -0.01]. These results held controlling for our set of covariates,  $b = -0.01$ ,  $SE = 0.001$ ,  $p < .001$ , 95% CI [-0.01, -0.01] (see models 1 and 2 of Table S3 in SOM). We then conducted the same regression analysis including the incentive system (1 = performance-incentive; 0 = participation-incentive), relationship type, and the interaction between incentive system and relationship type. The main effect of relationship type held and the interaction was not significant, suggesting that interacting more with friends and family than with colleagues resulted in greater happiness, regardless of incentive system (see model 3 of Table S3).<sup>10</sup>

Lastly, we tested whether there was any direct or indirect effect of performance incentives on happiness. We tested mediation using Mediation Model 4 (Hayes, 2013; Preacher & Hayes, 2004) with

<sup>10</sup> We also conducted the same regression analysis with the level of stress participants reported from interacting with work vs. personal relationships, which showed a similar result. See full description of the results in the SOM.



**Table 2**

Study 5 Regressions Estimating Prioritization of Colleagues to Family and Friends.

Variable	(1)	(2)	(3)
Performance incentives	2.44*** (0.18)	1.13*** (0.17)	0.90*** (0.17)
Age		6.11*** (0.52)	5.78*** (0.52)
Gender		−1.99*** (0.13)	−2.03*** (0.14)
Spouse Present			
Unmarried Spouse		3.97*** (0.31)	3.97*** (0.31)
Married Spouse		−6.51*** (0.17)	−6.37*** (0.17)
Household size		−14.03*** (0.48)	−14.54*** (0.48)
Income		−2.80*** (0.42)	−1.69*** (0.43)
Work hours		13.23*** (0.43)	13.57*** (0.43)
Hourly status		2.17*** (0.23)	1.73*** (0.14)
Day of week		YES	YES
Year		YES	YES
Occupation			YES
F Statistic	F(1,75210) =	F(20,62138) =	F(26,62133) =
p-value	177.07	1483.34	1208.34 <sup>a</sup>
R <sup>2</sup> adj	0.001	0.001	0.001
	0.001	0.33	0.34

Note. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . The control variables were measured and coded as follows: age (log), gender (0 = female; 1 = male), living with a married or unmarried partner (0 = not present; 1 = present), household size (log), work hours (log), hourly pay status (0 = non-hourly; 1 = hourly), occupation (dummy: service, sales, farming, construction, production, management, or professional services).

<sup>a</sup> The decrease in degrees of freedom from model 1 ( $n = 75,210$ ) to model 2 and 3 ( $n = 62,138$ – $62,133$ ) is due to missing data in the covariates.

incentive system as the independent variable (1 = performance-incentive, 0 = participation-incentive), time spent with colleagues (vs. with friends and family) as the mediating variable, and happiness as the dependent variable. While performance incentives did not directly affect happiness,  $b = -0.01$ ,  $SE = 0.02$ ,  $p = .388$ , 95% CI  $[-0.02, 0.04]$ , there was a significant indirect effect. To the extent that working under performance incentives encouraged people to spend more time with work colleagues and less time with friends and family, they reported lower happiness,  $b = -0.03$ ,  $SE = 0.002$ ,  $p < .001$ , 95% CI  $[-0.03, -0.02]$ . These results held controlling for our set of covariates,  $b = -0.01$ ,  $SE = 0.002$ ,  $p < .001$ , 95% CI  $[-0.01, -0.01]$ .

#### 7.4. Discussion

Study 5 provides additional, ecologically valid support for our prediction that exposure to performance incentives influences employees' social interactions not only within, but also outside organizations. In a large-scale, representative sample of U.S. working adults, people who were paid for their performance spent significantly more time interacting with work ties than with personal ties as compared to people who were not paid for their performance.

We also explored the affective responses of interacting with each type of relationship partner. Respondents in both the performance-incentive and participation-incentive groups derived greater happiness from socializing with friends and family (vs. colleagues). However, respondents who received performance incentives spent significantly more time with their colleagues and less time with their family and friends. These results suggest that, to the extent that performance incentives encourage people to prioritize work over personal relationships, performance incentives can undermine the happiness that people

experience in their daily lives.

## 8. General discussion

Across five studies using different methods, populations, and measures, exposure to performance incentives had contrasting effects on social interactions with work and personal ties. In Study 1, people working under performance incentives were more likely to choose to socialize with work colleagues at the sacrifice of spending time with friends and family. The effect of performance incentives on the prioritization of work ties was partially driven by perceived instrumentality (Study 2) and was moderated by task interdependence – the extent to which people were dependent on work colleagues to maximize their rewards (Study 3). We further replicated these results using a time allocation decision measure that examined work interactions tied to a specific task (Study 4). Lastly, in Study 5, people who were subject to performance incentives prioritized interacting with work colleagues over spending time with friends and family in their daily lives. People who worked under performance incentives and who socialized less with family and friends (vs. colleagues) consequently experienced lower levels of happiness.

### 8.1. Theoretical implications

The current studies provide support for our hypothesis that incentive systems – a crucial part of modern organizational structures – shape how people perceive and build social relationships. Specifically, we provide the first empirical examination of whether and how exposure to a specific incentive system – *how* one earns money – affects day-to-day social interaction patterns. Research has primarily focused on the effects of monetary rewards on social or prosocial motivation in general such as how a specific reward system shapes the degree to which someone is motivated to help other people, regardless of who those individuals are (Ariely, Bracha, & Meier, 2009). The present work demonstrates that the same contextual factor, performance incentives, can have varying effects on social interactions depending on the type and instrumentality of the relationship.

The quantity and quality of relationships with friends and family have far reaching well-being consequences. Positive close relationships are associated with greater physical and psychological health (Holt-Lunstad, Smith, & Layton, 2010; House, Landis, & Umberson, 1988; Uchino, Cacioppo, & Kiecolt-Glaser, 1996). Spending time with friends and family is the happiest part of most people's day (see Mogilner et al., 2018 for a review). Yet, people who work under performance incentives spend more time with colleagues and less time with family and friends. Our results suggest that performance incentives might have long-term negative consequences on well-being by decreasing the amount of time spent with close relationships. Future research should explore this and related possibilities.

The current work also contributes to an emerging literature that seeks to understand how organizational practices affect work-life balance (Goh, Pfeffer, & Zenios, 2015; Lockwood, 2003). Work-life balance is defined as the achievement of a satisfying experience across one's multiple life roles (Greenhaus & Beutell, 1985). Most employees feel that the pendulum swings more toward the side of 'work' than 'life' (Kelly et al., 2015; Schieman, Milkie, & Glavin, 2009). Our findings suggest that a ubiquitous incentive system – performance incentives – might contribute to a lack of work-life balance by encouraging employees to prioritize work ties over personal ties. This lack of balance is particularly concerning when considering downstream consequences for organizational performance (Allen, Herst, Bruck, & Sutton, 2000). Employees who experience greater work-life conflict report higher stress, lower job satisfaction, and greater turnover intentions (Anderson, Coffey, & Byerly, 2002; Ford, Heinen, & Langkamer, 2007).

Lastly, our results contribute to the literature on relationship formation. While prior research has traditionally conceptualized

relationship formation as a function of similarity and proximity (McPherson, Smith-Lovin, & Cook, 2001; Nahemow & Lawton, 1975), an increasing body of research has examined the role of goal instrumentality in relationship formation and maintenance (Fitzsimons & Shah, 2008; Gruenfeld, Inesi, Magee, & Galinsky, 2008). The current findings add to this research by testing perceived instrumentality as a mechanism to explain how incentive systems affect the way that individuals allocate their resources to different relationship partners.

## 8.2. Limitations and future direction

The exploratory analysis in Study 5 showed that respondents who were paid for performance derived lower happiness from socializing with their work colleagues, despite spending *more* time engaged in these interactions. Similarly, individuals working in performance incentive systems might derive a lower level of happiness from work relationships because these interactions may be construed as ‘strategic’ socializing (Casciaro et al., 2014). The current research focused on the degree to which work relationships were instrumental for making money, which does not necessarily capture the quality of these social relationships. Thus, future research should examine how performance incentives influence the perceived quality of social relationships by examining relationship satisfaction with both work ties and personal ties (Ingram & Zou, 2008).

Another generative area for future research is to explore whether exposure to performance incentives prompts the objectification of work colleagues. Prior research suggests that when a money-making goal is made salient, people tend to adopt a business decision frame, which entails cost-benefit analysis and the objectification of social relationships (Kouchaki, Smith-Crowe, Brief, & Sousa, 2013). People are also more likely to objectify other people in work contexts as compared to non-work contexts because they are more likely to think strategically (Belmi & Schroeder, 2020). Building on this line of work, future research should explore whether performance incentives increase the tendency to objectify work colleagues by increasing their perceived instrumentality. More research on this topic could illuminate aspects of work that shape how employees perceive and interact with each other.

Future studies should also explore individual, cultural, or occupational differences that moderate the effect of performance incentives. Lower SES workers tend to find team work more enjoyable than higher SES workers (Dittmann, Stephens, & Townsend, 2020). Although we did not observe significant interactions between performance incentives and SES to predict the quantity of social interactions, future research could explore whether lower (vs. higher) SES workers experience less satisfaction with work ties while working under performance incentives. Also, the effect of performance incentives on prioritization of work ties may be stronger in the context of collectivist cultures where the norm of socializing with colleagues is stronger (e.g., Heinrichs et al., 2006) or in occupations where there is a greater need for teamwork (e.g., athletics, law enforcement). Future research should explore these possibilities.

Our dependent measures primarily focused on trade-offs between socializing with work ties vs. personal ties. However, people could make decisions to offset the time spent with coworkers with other non-socializing activities, such as exercising or sleeping less, to spend time equally with coworkers and family. While we looked at socializing as a zero-sum measure, which is consistent with a great deal of previous research (e.g., Kelly et al., 2015; Schieman, Milkie, & Glavin, 2009; Whillans, Weidman, & Dunn, 2016), future research should explore the effect of performance incentives on the absolute amount of time people spend on social and other, non-social activities.

Lastly, we focused on financial compensation because money is the most common reward at work and has been shown to have an especially powerful effect on behavior (Pessiglione et al., 2007; Vohs, 2015). However, it is possible to receive other non-monetary objects as performance-based rewards. For example, children can receive a pizza for finishing a book, college students can earn an iPad for winning a

competition, and sales representatives can receive a car for having the best sales performance. Future research should therefore examine whether similar effects hold for other reward objects that individuals are striving toward.

## 9. Conclusion

Having positive relationships with close social ties can contribute to psychological and physical well-being. However, most working adults feel that they are not spending enough time with their friends and family. The current research points to one potential cause of this phenomenon: performance incentives. We show that performance incentives—a ubiquitous reward system that is used in various domains like health, education, and organizations—can critically shape socialization patterns. Overall, our research suggests that exposure to performance incentives alters the way that people think about and interact with different social ties, leading them to find their work colleagues as more instrumental and invest resources to build connections with them, even at the sacrifice of spending time with friends and family.

## CRedit authorship contribution statement

**Julia D. Hur:** Conceptualization, Methodology, Writing - review & editing. **Alice Lee-Yoon:** Formal analysis, Writing - review & editing. **Ashley V. Whillans:** Conceptualization, Methodology, Writing - review & editing.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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## Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.obhdp.2021.04.010>.

## References

- Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, White women. *Health Psychology, 19*(6), 586.
- Allen, T. D., Herst, D. E., Bruck, C. S., & Sutton, M. (2000). Consequences associated with work-to-family conflict: A review and agenda for future research. *Journal of Occupational Health Psychology, 5*, 278.
- Allan, B. M., & Fryer, R. G. (2011). *The power and pitfalls of education incentives*. Brookings Institution, Hamilton Project.
- Anderson, S. E., Coffey, B. S., & Byerly, R. T. (2002). Formal organizational initiatives and informal workplace practices: Links to work-family conflict and job-related outcomes. *Journal of Management, 28*, 787–810.
- Ariely, D., Bracha, A., & Meier, S. (2009). Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. *American Economic Review, 99*, 544–555.
- Bailey, C. D., Brown, L. D., & Cocco, A. F. (1998). The effects of monetary incentives on worker learning and performance in an assembly task. *Journal of Management Accounting Research.*
- Beilock, S. L., & Carr, T. H. (2005). When high-powered people fail: Working memory and “choking under pressure” in math. *Psychological Science, 16*, 101–105.
- Belmi, P., & Pfeffer, J. (2018). The effect of economic consequences on social judgment and choice: Reward interdependence and the preference for sociability versus competence. *Journal of Organizational Behavior, 39*(8), 990–1007.
- Belmi, P., & Schroeder, J. (2020). Human “resources”? Objectification at work. *Journal of Personality and Social Psychology.* <https://doi.org/10.1037/pspi0000254>.
- Berger, J., Herbertz, C., & Sliwka, D. (2011). Incentives and cooperation in firms: Field evidence.

- Bianchi, E. C., & Mohliver, A. (2016). Do good times breed cheats? Prosperous times have immediate and lasting implications for CEO misconduct. *Organization Science*, 27(6), 1488–1503.
- Bianchi, E. C., & Vohs, K. D. (2016). Social class and social worlds: Income predicts the frequency and nature of social contact. *Social Psychological and Personality Science*, 7, 479–486.
- Braun, H., Kirsch, I., & Yamamoto, K. (2011). An experimental study of the effects of monetary incentives on performance on the 12th-Grade NAEP reading assessment. *Teachers College Record*, 113(11), 2309–2344.
- Brunstein, J. C., Dangelmayr, G., & Schultheiss, O. C. (1996). Personal goals and social support in close relationships: Effects on relationship mood and marital satisfaction. *Journal of Personality and Social Psychology*, 71, 1006.
- Cadsby, C. B., Song, F., & Tapon, F. (2007). Sorting and incentive effects of pay for performance: An experimental investigation. *Academy of Management Journal*, 50, 387–405.
- Cameron, J., Pierce, W. D., Banko, K. M., & Gear, A. (2005). Achievement-based rewards and intrinsic motivation: A test of cognitive mediators. *Journal of Educational Psychology*, 97, 641.
- Caruso, E. M., Shapira, O., & Landy, J. F. (2017). Show me the money: A systematic exploration of manipulations, moderators, and mechanisms of priming effects. *Psychological Science*, 28, 1148–1159.
- Casciaro, T., Gino, F., & Kouchaki, M. (2014). The contaminating effects of building instrumental ties: How networking can make us feel dirty. *Administrative Science Quarterly*, 59, 705–735.
- Castilla, E. J., & Benard, S. (2010). The paradox of meritocracy in organizations. *Administrative Science Quarterly*, 55(4), 543–676.
- Chartrand, T. L., & Bargh, J. A. (1996). Automatic activation of impression formation and memorization goals: Nonconscious goal priming reproduces effects of explicit task instructions. *Journal of Personality and Social Psychology*, 71, 464.
- Cohen, J. (1992). A power primer. *Psychological bulletin*, 112(1), 155.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences*. Routledge.
- DeFulio, A., & Silverman, K. (2012). The use of incentives to reinforce medication adherence. *Preventive Medicine*, 55, 86–94.
- Desan, C. (2014). *Making money: Coin, currency, and the coming of capitalism*. USA: Oxford University Press.
- Diener, E., & Seligman, M. E. (2002). Very happy people. *Psychological science*, 13(1), 81–84.
- Dittmann, A. G., Stephens, N. M., & Townsend, S. S. M. (2020). Achievement is not class-neutral: Working together benefits people from working-class contexts. *Journal of Personality and Social Psychology*, 119(3), 517–539.
- Dur, R., & Sol, J. (2010). Social interaction, co-worker altruism, and incentives. *Games and Economic Behavior*, 69, 293–301.
- Eisenberger, R., Rhoades, L., & Cameron, J. (1999). Does pay for performance increase or decrease perceived self-determination and intrinsic motivation? *Journal of Personality and Social Psychology*, 77, 1026.
- Foley, D. (1982). The value of money, the value of labor-power, and the Marxian transformation problem. *Review of Radical Political Economics*, 14, 37–49.
- Fitzsimons, G. M., & Shah, J. Y. (2008). How goal instrumentality shapes relationship evaluations. *Journal of Personality and Social Psychology*, 95, 319.
- Fonner, K. L. (2015). Communication among coworkers. *The International Encyclopedia of Interpersonal Communication* (pp. 1–10).
- Ford, M. T., Heinen, B. A., & Langkamer, K. L. (2007). Work and family satisfaction and conflict: A meta-analysis for cross-domain relations. *Journal of Applied Psychology*, 92(1), 57–80.
- Gallant, M. P., Spitzer, G. D., & Prohaska, T. R. (2007). Help or hindrance? How family and friends influence chronic illness self-management among older adults. *Research on Aging*, 29, 375–409.
- Girard, J. M., & Cohn, J. F. (2016). A primer on observational measurement. *Assessment*, 23(4), 404–413.
- Goh, J., Pfeffer, J., Zenios, S. A. (2015). Workplace stressors and health outcomes: health policy for the workplace. *Behavior Science Politics*, 1(1), 43–52.
- Greenhaus, J. H., & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of Management Review*, 10(1), 76–88.
- Gruenfeld, D. H., Inesi, M. E., Magee, J. C., & Galinsky, A. D. (2008). Power and the objectification of social targets. *Journal of Personality and Social Psychology*, 95, 111.
- Giurge, L. M., Whillans, A. V., & West, C. (2020). Why time poverty matters for individuals, organisations and nations. *Nature Human Behaviour*, 1–11.
- Harrison, D. A., Virick, M., & William, S. (1996). Working without a net: Time, performance, and turnover under maximally contingent rewards. *Journal of Applied Psychology*, 81, 331.
- Harrison, C. (2019, January 8). 77% of organizations offering variable pay plans. Retrieved from <https://www.salary.com/blog/compensation-trends-organizations-embracing-variable-pay/>.
- Hayes, A. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford.
- Heinrichs, N., Rapee, R. M., Alden, L. A., Bogels, S., Hofmann, S. G., Oh, K. J., & Sakano, Y. (2006). Cultural differences in perceived social norms and social anxiety. *Behaviour Research and Therapy*, 44(8), 1187–1197.
- Hershfield, H. E., Mogilner, C., & Barnea, U. (2016). People who choose time over money are happier. *Social Psychological and Personality Science*, 7(7), 697–706.
- Hofferth, S., Flood, S., & Sobek, M. (2013). American time use survey data extract system: Version 2.4 [Machine-readable database]. Minneapolis, MI: Maryland Population Research Center, University of Maryland, College Park, Maryland, and Minnesota Population Center, University of Minnesota.
- Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLOS Medicine*, 7.
- House, J. S., Landis, K. R., & Umberson, D. (1988). Social relationships and health. *Science*, 241, 540–545.
- Hur, J. D., Koo, M., & Hofmann, W. (2015). When temptations come alive: How anthropomorphism undermines self-control. *Journal of Consumer Research*, 42, 340–358.
- Hur, J. D., & Nordgren, L. F. (2016). Paying for performance: Performance incentives increase desire for the reward object. *Journal of Personality and Social Psychology*, 111, 301.
- Hur, J. D., Ruttan, R. L., & Shea, C. T. (2020). The unexpected power of positivity: Predictions versus decisions about advisor selection. *Journal of Experimental Psychology: General*, 149, 1969–1986.
- Ingram, P., & Zou, X. (2008). Business friendships. *Research in Organizational Behavior*, 28, 167–184.
- Jenkins, G. D., Jr, Mitra, A., Gupta, N., & Shaw, J. D. (1998). Are financial incentives related to performance? A meta-analytic review of empirical research. *Journal of Applied Psychology*, 83, 777.
- Juliano, L. M., Donny, E. C., Houtsmuller, E. J., & Stitzer, M. L. (2006). Experimental evidence for a causal relationship between smoking lapse and relapse. *Journal of Abnormal Psychology*, 115, 166.
- Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004). A survey method for characterizing daily life experience: The day reconstruction method. *Science*, 306, 1776–1780.
- Kashyap, V. (2019, May 20). Effective communication in the workplace: How and why? *HR Technologist*. <https://www.hrtechnologist.com/articles/employee-engagement/effective-communication-in-the-workplace-how-and-why/>.
- Kelly, E. L., Moen, P., Oakes, J. M., Fan, W., Okechukwu, C., Davis, K. D., ... Casper, L. (2015). Changing Work and Work-Family Conflict: Evidence from the Work, Family, and Health Network. *American Sociological Review*, 79(3), 485–516.
- Kouchaki, M., Smith-Crowe, K., Brief, A. P., & Sousa, C. (2013). Seeing green: Mere exposure to money triggers a business decision frame and unethical outcomes. *Organizational Behavior and Human Decision Processes*, 121(1), 53–61.
- Krosnick, J. A., & Alwin, D. F. (1987). An evaluation of a cognitive theory of response-order effects in survey measurement. *Public Opinion Quarterly*, 51(2), 201–219.
- Larkin, I., Pierce, L., & Gino, F. (2012). The psychological costs of pay-for-performance: Implications for the strategic compensation of employees. *Strategic Management Journal*, 33, 1194–1214.
- Lazear, E. P. (2000). Performance pay and productivity. *American Economic Review*, 90, 1346–1361.
- Lea, S. E., & Webley, P. (2006). Money as tool, money as drug: The biological psychology of a strong incentive. *Behavioral and Brain Sciences*, 29, 161–209.
- Lockwood, N. R. (2003). Work life balance: Challenges and solutions. *SHRM. Research Quarterly*.
- Lucero, K. (January 23, 2019). What is variable pay in sales compensation? Retrieved from <https://www.xactlycorp.com/blog/what-is-variable-pay-competitive-compensation>.
- Markman, A. B., Maddox, W. T., & Worthy, D. A. (2006). Choking and excelling under pressure. *Psychological Science*, 17, 944–948.
- McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, 27, 415–444.
- Miceli, M. P., Jung, I., Near, J. P., & Greenberger, D. B. (1991). Predictors and outcomes of reactions to pay-for-performance plans. *Journal of Applied Psychology*, 76, 508.
- Mogilner, C. (2010). The pursuit of happiness: Time, money, and social connection. *Psychological Science*, 21, 1348–1354.
- Mogilner, C., Whillans, A., & Norton, M. I. (2018). Time, money, and subjective well-being. *Handbook of Well-Being*. Noba Scholar Handbook series: Subjective well-being. Salt Lake City, UT: DEF publishers.
- Nahemow, L., & Lawton, M. P. (1975). Similarity and propinquity in friendship formation. *Journal of Personality and Social Psychology*, 32, 205.
- Pai, J., DeVoe, S. E., & Pfeffer, J. (2020). How income and the economic evaluation of time affect who we socialize with off the job. *Organizational Behavior and Human Decision Processes*, 161, 158–175.
- Paul, S. (2018). American families barely spend quality time together.
- Pessiglione, M., Schmidt, L., Draganski, B., Kalisch, R., Lau, H., Dolan, R. J., & Frith, C. D. (2007). How the brain translates money into force: A neuroimaging study of subliminal motivation. *Science*, 316(5826), 904–906.
- Politis, J. D. (2003). The connection between trust and knowledge management: What are its implications for team performance. *Journal of Knowledge Management*, 7(5), 55–66.
- Porritt, J. (2007). *Capitalism as if the World Matters*. Earthscan.
- Poole, M. S., Hewes, D. E., VanLear, C. A., & Canary, D. J. (2017). Reliability and validity in the measurement of social interaction. *Researching Interactive Communication Behavior: A Sourcebook of Methods and Measures* (pp. 217–233).
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36, 717–731.
- Reynolds, W. M. (1982). Development of reliable and valid short forms of the Marlowe-Crowne Social Desirability Scale. *Journal of Clinical Psychology*, 38(1), 119–125.
- Roux, C., Goldsmith, K., & Bonezzi, A. (2015). On the psychology of scarcity: When reminders of resource scarcity promote selfish (and generous) behavior. *Journal of Consumer Research*, 42(4), 615–631.
- Rusbult, C. E., Campbell, M. A., & Price, M. E. (1990). Rational selective exploitation and distress: Employee reactions to performance-based and mobility-based reward allocations. *Journal of Personality and Social Psychology*, 59, 487.

- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25, 54–67.
- Schieman, S., Milkie, M. A., & Glavin, P. (2009). When work interferes with life: Work-nonwork interference and the influence of work-related demands and resources. *American Sociological Review*, 74(6), 966–988.
- Shah, J. Y., Friedman, R., & Kruglanski, A. W. (2002). Forgetting all else: On the antecedents and consequences of goal shielding. *Journal of Personality and Social Psychology*, 83, 1261.
- Shea, C. T., & Fitzsimons, G. M. (2016). Personal goal pursuit as an antecedent to social network structure. *Organizational Behavior and Human Decision Processes*, 137, 45–57.
- Shomstein, S., & Johnson, J. (2013). Shaping attention with reward: Effects of reward on space- and object-based selection. *Psychological Science*, 24, 2369–2378.
- Smeets, P., Whillans, A., Bekkers, R., & Norton, M. I. (2020). Time use and happiness of millionaires: Evidence from the Netherlands. *Social Psychological and Personality Science*, 11(3), 295–307.
- Stroh, L. K., Brett, J. M., Baumann, J. P., & Reilly, A. H. (1996). Agency theory and variable pay compensation strategies. *Academy of Management Journal*, 39, 751–767.
- Uchino, B. N., Cacioppo, J. T., & Kiecolt-Glaser, J. K. (1996). The relationship between social support and physiological processes: A review with emphasis on underlying mechanisms and implications for health. *Psychological Bulletin*, 119, 488.
- U.S. Department of Labor Statistics. (2015). American time use survey. Retrieved from <http://www.bls.gov/tus/>.
- Vohs, K. D. (2015). Money priming can change people's thoughts, feelings, motivations, and behaviors: An update on 10 years of experiments. *Journal of Experimental Psychology: General*, 144, 86.
- Vohs, K. D., Mead, N. L., & Goode, M. R. (2006). The psychological consequences of money. *Science*, 314, 1154–1156.
- Whillans, A. V., & Dunn, E. W. (2018). Valuing time over money is associated with greater social connection. *Journal of Social and Personal Relationships*, 36, 2549–2565.
- Whillans, A., Macchia, L., & Dunn, E. (2019). Valuing time over money predicts happiness after a major life transition: A preregistered longitudinal study of graduating students. *Science Advances*, 5(9), eaax2615.
- Whillans, A. V., Weidman, A. C., & Dunn, E. W. (2016). Valuing time over money is associated with greater happiness. *Social Psychological and Personality Science*, 7, 213–222.
- Zagenczyk, T. J., & Murrell, A. J. (2009). It is better to receive than to give: Advice network effects on job and work-unit attachment. *Journal of Business Psychology*, 24, 139–152.